REMARKS/ARGUMENTS

In response to the final Office Action mailed February 1, 2006, applicant respectfully requests reconsideration. In the Office Action, claims 1-10, 16 and 17 were rejected. By this amendment, claims 1 and 6 have been amended and claim 19 has been added. Accordingly, claims 1-10, 16, 17 and 19 are currently pending in this application.

Claim Rejection Under 35 U.S.C. §102

Claims 1-10, 16 and 17 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,417,463 to Cornelius et al. ("Cornelius"). This rejection is respectfully traversed, as Cornelius does not teach every element of the claims, as is required for a proper rejection under 35 U.S.C. §102(b).

Independent claim 1 recites a method comprising:

A method comprising:

A. providing a substrate having a first surface and a second surface, the first surface being adapted for mounting an electronic device thereon, the substrate including a grid of electrically conductive vias extending from a region proximate the first surface to a region proximate the second surface, each via being one of a signal via, a ground via and a power via;

B. removing at least one of the vias to form a void in the substrate between a ground via and a power via; and

C. connecting the ground via proximate the void to power via proximate the void with a filter device disposed at the void proximate the second surface of the substrate.

Cornelius teaches a ball grid array having open spaces between the balls and pairs of opposite polarity vias clustered to minimize current path inductance. Capacitors are coupled to the vias to further reduce current path inductance.

Cornelius does not teach the invention recited in independent claim 1. Specifically, Cornelius does not teach removing at least one of the vias to form a void in the substrate between a ground via and a power via. Cornelius teaches removing balls from a ball grid array to form open spaces 108 and designing a ball grid array with open

spaces "from scratch", and even removing vias among the balls of the ball grid array. In the latter instance, while vias may be removed from the array, they are replaced with via pads, thus filling any void that might have been formed by removing the via with a different form of via. (Col. 4, lines 1-8). However, there is no teaching or suggestion of removing vias to form a void between a ground via and a power via. To the contrary, Cornelius teaches filling an open space in the ball grid array with vias and then connecting the vias to surrounding balls.

Furthermore, Cornelius does not teach connecting the one ground via proximate the void to the power vias proximate the void with a filter device disposed at the void proximate the second surface of the substrate. First, because Cornelius does not teach or suggest forming a void between at least one ground via and at least one power via, Cornelius cannot teach connecting the power and ground vias proximate the void with a filter device. Second, Cornelius does not teach connecting power and ground vias with a filter device disposed at the void proximate the second surface of the substrate. The capacitor 129 shown in Fig. 4b of Cornelius connects a via with a ball. This capacitor is not connected proximate a void, because a void is never formed in the substrate, and particularly not by removing vias.

Accordingly, since Cornelius does not teach every element recited in independent claim 1, the rejection of independent claim 1 under 35 U.S.C. §102(b) is improper and should be withdrawn.

Claims 2-5 and 16 depend from independent claim 1 and are allowable for at least the same reasons as independent claim 1.

Independent claim 6 recites a method comprising:

A. providing a substrate having a first surface and a second surface, the first surface being adapted for mounting an electronic device thereon;

B. forming a grid of electrically conductive vias extending from a region proximate the first surface to a region proximate the second surface, each via being one of a signal via, a ground via and a power via;

C. removing at least one of the vias to form a void in the substrate between a ground via and a power via; and

D. connecting the ground via proximate the void to the power via proximate the void with a filter device disposed at the void proximate the second surface of the substrate.

Applicant asserts that Cornelius does not teach the invention recited in independent claim 6. As described above, Cornelius does not teach removing at least one of the vias to form a void in the substrate between a ground via and a power via. To the contrary, Cornelius teaches filling an open space in the ball grid array with vias and then connecting the vias to surrounding balls.

Furthermore, Cornelius does not teach connecting the ground via proximate the void to the power via proximate the void with a filter device disposed at the void proximate the second surface of the substrate. First, because Cornelius does not teach or suggest forming a void between a ground via a power via, Cornelius cannot teach connecting power and ground vias with a filter device proximate the void. Second, Cornelius does not teach connecting power and ground vias with a filter device disposed at the void proximate the second surface of the substrate. The capacitor 129 shown in Fig. 4b of Cornelius connects a via with a ball. This capacitor is not connected proximate a void, because a void is never formed in the substrate, and particularly not by removing vias.

Accordingly, since Cornelius does not teach every element recited in independent claim 6, the rejection of independent claim 6 under 35 U.S.C. §102(b) is improper and should be withdrawn.

Claims 7-10 and 17 depend from independent claim 6 and are allowable for at least the same reasons as independent claim 6.

New claim 19 recites a method comprising:

A. providing a substrate having a first surface and a second surface, the first surface being adapted for mounting an electronic device thereon, the substrate including a grid of electrically conductive vias extending from a region proximate the first surface to a region proximate the second surface, each via being one of a signal via, a ground via and a power via;

B. removing at least one of the ground vias to form a void in the substrate between a ground via and a power via; and

C. connecting the ground via proximate the void to power via proximate the void with a filter device disposed at the void proximate the second surface of the substrate.

In addition to the arguments set forth above with respect to the rejections of claim 1 and 6, applicant further asserts that Cornelius also does not teach or suggest removing ground vias to form a void in the substrate between a ground via and a power via.

Accordingly, since Cornelius does not teach every element recited in independent claim 19, applicant asserts that the claim is allowable over the art of record.

Based on the foregoing amendments and remarks, applicant asserts that pending claims 1-10, 16 and 17 are allowable over the prior art of record and respectfully requests that a timely Notice of Allowance be issued in this application.

In the event the Examiner deems personal contact desirable in the disposition of this case, the Examiner is invited to call the undersigned attorney at 508.293.7835.

Applicant submits herewith a request for a one-month extension of time from the mailing date of the Advisory Action, as set forth in Section 1(b) thereof. Please charge all fees occasioned by this submission to Deposit Account No. 05-0889.

Respectfully submitted,

6/14/06

Date

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